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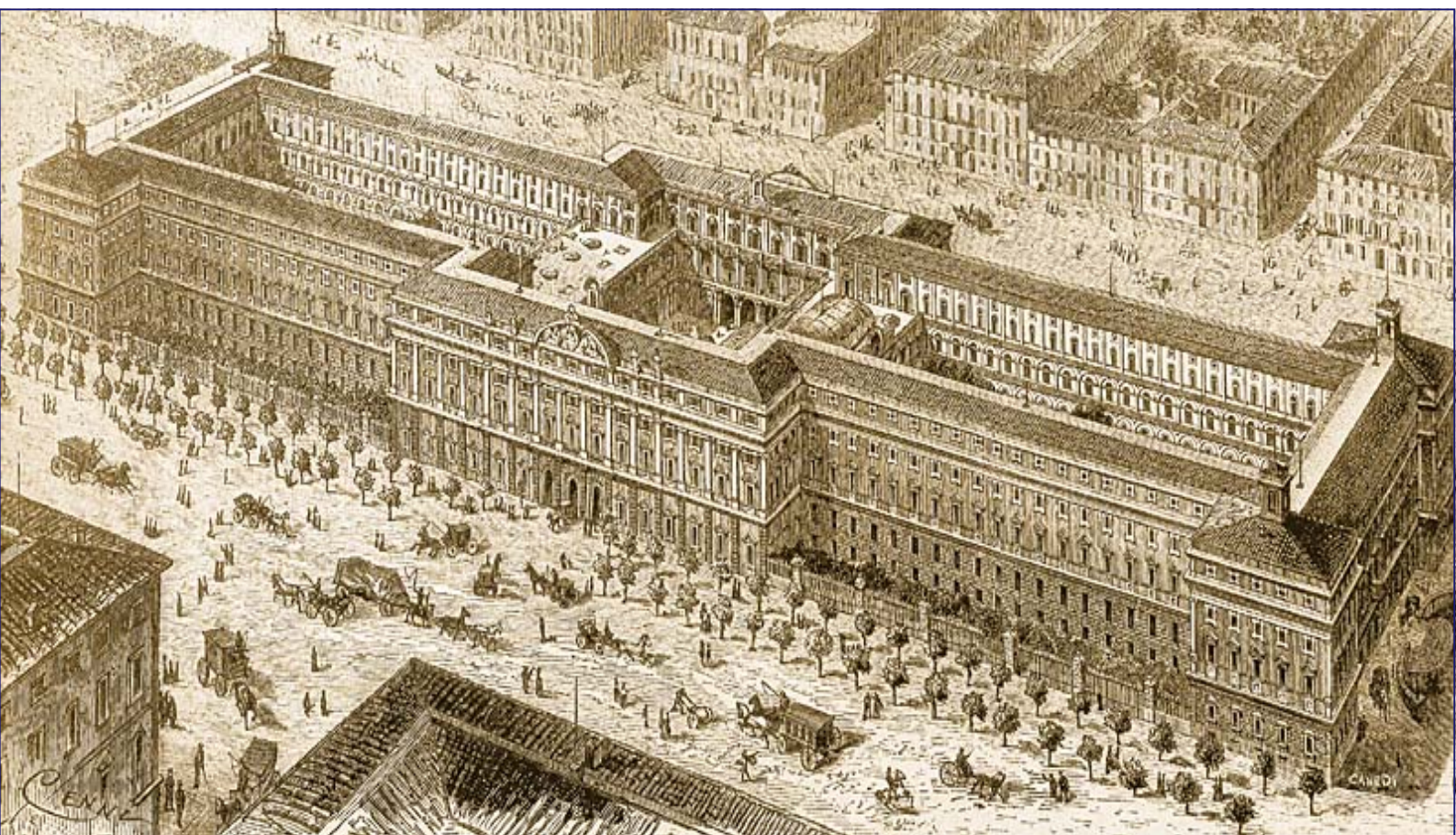


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Are Italy's public finances sustainable? The role of demographics, productivity, and labour markets.

Paolo Biraschi, Lorenzo Codogno, Federico Giammusso,
Manuela Nenna, Juan Pradelli



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Are Italy's public finances sustainable? The role of demographics, productivity, and labour markets.¹

Paolo Biraschi (*), Lorenzo Codogno (*), Federico Giammusso (*),
Manuela Nenna (*), Juan Pradelli (**)

Abstract

In light of the uncertainty of the effects of population ageing on growth and fiscal variables, it is sensible to ask whether Italy's public finances can achieve sustainability under the spending pressure exerted by future demographic and macroeconomic developments. The paper addresses this question by assessing long-term fiscal sustainability, following the commonly-agreed European methodology, under alternative scenarios considering a variety of issues that may have a bearing on Italy's public finance conditions, namely, immigration, life expectancy, female labour participation, and productivity growth. Despite the different hypotheses captured by the alternative scenarios, the paper finds that projected debt-to-GDP ratios decrease over time, as long as fiscal consolidation is achieved in the near future. It also shows a one-shot debt-reduction strategy is not a credible substitute for a budgetary-adjustment strategy. The paper concludes Italy's public finances are sustainable and can deal with future spending pressures resulting from the ageing population.

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1 INTRODUCTION

At first glance, defining long-term fiscal sustainability could appear quite a simple task. The concept of fiscal sustainability refers to the ability of the government to meet its current and future budgetary obligations. Formally, public finances are sustainable as long as the government intertemporal budget constraint is satisfied, i.e. the expected present discounted value of future primary surpluses equals or exceeds the current outstanding debt.

Since current spending and tax policies are expected to bring about the public sector's future obligations, sustainability also refers to the ability of the government to maintain the current fiscal policies over time without having to introduce major budget adjustments in the future. On the other hand, policies are deemed unsustainable if they lead to an excessive debt accumulation that will put the government sooner or later in the politically painful position of having to take action to address the undesired consequences of a heavy debt burden. If the government employs imprudent fiscal policy over and over, investors may reasonably envisage a scenario in which financial and budgetary obligations reach such a high level that the government becomes unable to service debt, or unwilling to undertake a large budget adjustment. In such a scenario, investors in public debt would require a compensation for the higher default risk by increasing interest rates on new lending and on the rollover of existing liabilities. To the extent that real interest rates on public debt affect the cost of capital for private investment financing, a crowding-out effect would likely to occur to the detriment of growth prospects over the medium- and long-term. And were the government not be willing to borrow at higher interest rates, it would have to undertake the budget adjustment immediately.

The aim of the paper is twofold: (i) to describe the commonly-agreed European methodology that the Italian government adopts in official documents to assess fiscal sustainability, and to discuss some critical issues in that regards; and (ii) to provide a sustainability assessment for Italy under alternative scenarios on the basis of different projections for demographic and macroeconomic variables.

In the paper, we provide an extension to the standard assessment of sustainability of public finance routinely performed in Italy's Stability Programme. Thus, the alternative scenarios have been constructed for the purpose of the paper and they cover a wide array of issues associated with the ageing population phenomenon, e.g. immigration, life expectancy, female labour participation, and productivity growth.

As there is a high degree of uncertainty on the effect of ageing on growth and fiscal variables, it is sensible to ask whether Italy's public finances can achieve sustainability under the spending pressure exerted by future demographic and macroeconomic developments. The paper, nevertheless, addresses this question by assessing long-term fiscal sustainability in the set of alternative scenarios, therefore considering a variety of possibilities that may materialise in the future and have a bearing on Italy's public finances. The focus is on scenarios in which public finance is seriously under pressure. Sensitivity analysis evaluates both the upside and downside risks to sustainability.

Despite the many circumstances incorporated into the alternative scenarios and working on the assumption that fiscal consolidation is achieved in the near future (2008-2011), the paper

finds that projected debt-to-GDP ratios decrease over time. Therefore, it concludes Italy's public finances are sustainable and can deal with future spending pressures resulting from the ageing population.

The paper is organised as follows. Section 2 points out the relevance of fiscal sustainability within the EMU context and discusses the methodology developed by the Economic Policy Committee – Ageing Working Group (EPC-AWG, hereinafter).² Section 3 shows the results of a long-term fiscal sustainability analysis for Italy under a benchmark 'programme scenario' in which Italy achieves the budgetary and debt targets corresponding to the 2007 Stability Programme. Given the uncertainty regarding the demographic and macroeconomic assumptions underlying that scenario, section 4 conducts a sensitivity analysis aiming at evaluating the robustness of sustainability results under alternative scenarios. Section 5 describes the impact on primary spending, and consequently on fiscal sustainability, of the pension reforms implemented in Italy in recent years. Section 6 summarises and concludes.

2 LONG-TERM FISCAL SUSTAINABILITY IN THE EU

2.1 Relevance of fiscal sustainability in a monetary union

For any sovereign country, maintaining a sustainable fiscal path represents a key issue in order to achieve economic efficiency and inter-generational equity in the allocation of financial resources. Indeed, public debt accumulation, if not excessive, can contribute to government policies aimed at fostering long-term growth, achieving fairness across generations in terms of welfare, and stabilising business cycle fluctuations. However, when public debt accumulation becomes excessive, it not only no longer makes a contribution to achieving government policy goals, but it produces adverse effects on macroeconomic and fiscal conditions. A high and increasing debt erodes growth potential by raising real interest rates and crowding out private investment. It also narrows the government's manoeuvring room in terms of expenditure policy and short-run stabilisation efforts.³

Long-term fiscal sustainability plays an even more important role in a currency union because of the spill-over effects that spread the negative consequences of one member state's fiscal profligacy and excessive public debt to the others. Political economy arguments such as free-riding and moral hazard offer a strong rationale for the demand of fiscal sustainability in monetary unions. In the EMU context, where fiscal policy has remained the competence of national policy-makers whereas monetary policy has been devolved to the ECB at supra-national level, public finance sustainability becomes an essential precondition for assigning short-term stabilisation targets to fiscal policy and a price stability targets to monetary policy.

² In 1999 the Ecofin Council gave mandate to its Economic Policy Committee to establish a working group to agree a European methodology for projecting the impact of ageing on public finances.

³ In recent years, vast empirical literature with reference to industrialised countries has shown evidence that a high level of debt and persistent fiscal deficits impose significant economic costs in terms of higher interest rates and lower domestic investment (Gale and Orszag, 2004). It has also been documented that public expenditure contributes to boosting GDP growth in countries exhibiting low debt levels, while a higher public expenditure can lead to lower GDP growth in countries with a high debt level (Alesina and Perotti, 1995; Giavazzi and Pagano, 1990; Arpaia and Turrini, 2008).

Prolonged fiscal imbalances by one member state would produce negative externalities on the entire monetary union through an increase in real interest rates, a contraction in private investment, and the consequent deterioration of growth potential for all members. Excessive public debt by one member state could also be inconsistent with the ECB's monetary policy. Despite the Maastricht Treaty provisions explicitly banning any form of bail-out, a highly-indebted country could exert political pressure on the ECB to step in to monetise the country's debt by allowing higher inflation to erode the debt's real value. Even before getting to that point, a highly-indebted country could exert political pressure on the ECB to lower interest rates (or avoid increasing them) since higher interest rates would further deteriorate the public finances of that country.

The assessment of long-term fiscal sustainability has ended up at the core of both the EU political and the academic debate because of: the distinctiveness of the EMU economic policy framework; the challenges of globalization in terms of tax competition; and the unfavourable demographic trends resulting from population ageing, which entail a large burden of implicit liabilities in pensions and health care spending. Initially, the Maastricht Treaty and the Stability and Growth Pact (SGP, hereinafter) had established severe budgetary thresholds along with procedures to monitor and sanction fiscal discipline within the EMU member states. With the 2005 SGP reform, public debt sustainability officially became a crucial aspect of the multilateral surveillance process of budgetary positions.

In consideration thereof, long-term fiscal sustainability is regularly assessed both in the EU countries' Stability and Convergence Programmes and in the European Commission's Sustainability Report. The main purpose of sustainability assessments is to identify sources of budgetary risks that arise from current policies and ageing populations. Through the examination of quantitative and qualitative information, the analysis aims to determine whether a country faces a low, medium, or high level of risk to public finance sustainability. In addition, it reveals whether future pressures on public finances are due to the current fiscal position, the long-term budgetary developments, or both.

The benchmark chosen by the EPC-AWG to assess sustainability is the analysis of public debt dynamics. This benchmark offers some advantages of a practical nature regarding its operational implementation and the discussion of policy implications. First, debt is a notion easy to understand and to interpret by policy-makers, the public, and the financial markets. This facilitates public debate about the implications of the sustainability analysis as regards to the government policies currently in place as well as policy proposals for the future. Second, debt statistics are reported on a regular basis and constructed following internationally-agreed methodologies, thus allowing for cross-country comparisons and a higher level of institutional transparency. Third, in projecting the future evolution of public debt, EU countries often use the EPC-AWG projections on demographic, macroeconomic, and fiscal variables. Since the EPC-AWG projections are also constructed by using internationally-agreed methodologies, the long-term fiscal sustainability assessments are comparable across EU countries.

2.2 The assessment of long-term fiscal sustainability in the EU

The EPC-AWG methodology for assessing long-term fiscal sustainability involves three main steps: (i) projecting the public debt stock, as proportion of GDP, on the basis of

demographic, macroeconomic, and fiscal projections that capture some implications of ageing on labour markets and public spending; (ii) computing synthetic sustainability indicators to measure the fiscal adjustment that would be needed to render public finances sustainable, given formal conditions associated with a fiscal path deemed sustainable; and (iii) conducting a sensitivity analysis to evaluate the robustness of the sustainability results by considering a set of alternative scenarios characterised by different demographic, macroeconomic, and fiscal projections. Some analytical issues underlying steps (i) and (ii) are discussed below.⁴

Projecting public debt

From an analytical perspective, public debt projections are based on the dynamic government budget constraint, according to which the change in debt-to-GDP ratio in year t is given by:

$$d_t - d_{t-1} = r_t d_{t-1} - pb_t \quad (1)$$

where d_t denotes the ratio between the public debt stock D_t measured at the end of year t and the nominal GDP Y_t , pb_t is the primary balance-to-GDP ratio, and the net rate r_t is given by $(1+r_t)=(1+i_t)/(1+y_t)$ where i_t is the nominal interest rate and y_t is the growth rate of nominal GDP.⁵

Iterating forward the equation in differences (1), the debt ratio d_{t+h} in a future year $t+h$ is given by:

$$d_{t+h} = R_{t,t+h} d_{t-1} - \sum_{s=t}^{t+h} R_{s+1,t+h} pb_s \quad (2)$$

where the gross rate $R_{i,j}$ is defined by $R_{i,j} = (1+r_i)(1+r_{i+1})\dots(1+r_j)$ for $i \leq j$ and $R_{i,j} = 1$ for $i > j$.

The future path of debt-to-GDP ratio over a certain time horizon is projected using (2) along with prospective values for the key variables determining the debt dynamics, i.e. the growth rate of nominal GDP, the nominal interest rate, and the primary balance. In this regard, the EPC-AWG has proposed methodologies relying on well-defined assumptions in order to project these variables. More importantly, the EPC-AWG projection methodologies attempt to capture those effects of demographic and macroeconomic developments that are neither likely to be observed in historical data nor projected into the future, but for which there is broad consensus that they will occur in years ahead, i.e. the ageing population. Given projected values for y_t , i_t , and pb_t , the evolution of public debt is computed over a time horizon that currently extends up to year 2050 and starts the first year following the end of the medium-term period covered by the Stability and Convergence Programmes.

According to the commonly-agreed methodology, the growth rates of nominal GDP are

⁴ For a description of the EPC-AWG methodology to project demographic and macroeconomic variables and to assess long-term fiscal sustainability, see Economic Policy Committee and European Commission (2005) and European Commission (2006).

⁵ For the sake of simplifying the analysis, valuation effects and measures that give rise to stock-flow adjustments have not been considered since they are neutral in the long-term.

projected on the basis of country-specific estimates of growth rates of potential real GDP, which in turn involve projections for employment and labour productivity that take into account future demographic and labour market developments in each country. It is assumed, in addition, that annual inflation for the GDP deflator remains constant at 2% for all countries over the projection period. Similarly, the nominal interest rate is assumed to be constant at 5% per annum, implying that all countries face a real interest rate of 3%.

As far as the primary balance is concerned, it reflects the evolution of revenues, property income, age-related expenditure, and non-age-related expenditure.⁶ Projections for age-related expenditure cover five spending items: pensions, health care, long-term care, education, and unemployment benefits. These spending items, as proportions of GDP, are projected for each individual country following internationally-agreed methodologies designed with an explicit objective of addressing the fiscal effects of ageing. The revenue-to-GDP and non-age-related expenditure-to-GDP ratios are assumed to be constant at the value observed the year before public debt projections begin, i.e. at the end of the medium-term period covered by each country's Stability (or Convergence) Programme. To be consistent with both the notion of long-term fiscal sustainability and the Stability and Growth Pact requirements, though, the EPC-AWG methodology adjusts tax revenues and non-age-related spending to eliminate temporary effects due to business cycle fluctuations and one-off fiscal measures that should not be projected into the future. In doing so, fiscal projections refer to 'structural' primary balances.⁷

According to the EPC-AWG criteria to project the components of primary balance, projected changes in the primary balance-to-GDP ratio over the projection horizon are exclusively accounted for by changes in property income-to-GDP and age-related expenditure-to-GDP ratios. In interpreting the data, the projected pb_s for any future year s is often broken down into two elements: (i) the level of the initial primary balance-to-GDP ratio pb_{t-1} , which is seen as the budgetary outcome that would be observed in year s if current fiscal conditions were to remain unchanged up to s ; and (ii) the value of the difference $pb_s - pb_{t-1}$, which is considered to be the budgetary change expected to occur in the future, mainly as a consequence of increasing age-related expenditure associated with an ageing population. Under this interpretation, public debt projections are computed on the basis of expression (2), the initial debt ratio d_{t-1} , the initial primary balance-to-GDP ratio pb_{t-1} , and the projected changes for property income-to-GDP $pi_s - pi_{t-1}$ and age-related expenditure-to-GDP $are_s - are_{t-1}$ ratios.⁸

Sustainability indicators

In the EU framework, fiscal policies are deemed sustainable if they meet the government

⁶ Non-age-related expenditure refers to public investment, other social expenditure apart from pensions, health, and education, purchases of goods and services not due to age-related items, employees' compensations, excluding staff in health care and education.

⁷ At the EU level, the Protocol on Excessive Deficit Procedure annexed to the Maastricht Treaty defines the concept of gross debt. This concept is easy to measure and comparable across countries. However, fiscal resources can be used to repay debt or to accumulate assets, but only in the former case there is an effect on the stock of gross debt. Therefore, the gross debt should be adjusted so as to reflect any improvement in fiscal sustainability resulting from the accumulation of liquid assets by the government. In this regard, the EPC-AWG has agreed on criteria to assess fiscal sustainability using the concept of adjusted gross debt: the Maastricht gross debt is adjusted by considering exclusively the consolidated liquid assets that are accumulated in public pension funds with the purpose of covering pension-related expenditure. The EPC-AWG has recently proposed a methodology to estimate property income, as a proportion of GDP, taking into account the assets held by each country.

⁸ Formally, $pb_s - pb_{t-1} = (pi_s - pi_{t-1}) - (are_s - are_{t-1})$.

intertemporal budget constraint:

$$\sum_{s=t}^{\infty} \frac{pb_s}{R_{t,s}} \geq d_{t-1} \quad (3)$$

Complementing the government intertemporal budget constraint, other sustainability condition is considered: it requires fiscal policies to deliver a public debt below 60% of GDP so as to satisfy the Maastricht Treaty's criterion, i.e. $d_{t+h} \leq 60\%$ at some year $t+h$.

To the extent that long-term projections for GDP growth, interest rates, and the components of primary balance are inconsistent with the sustainability conditions, the analysis goes further in order to measure the gap between the projected debt dynamics and an arbitrarily-chosen debt path that does fulfil the sustainability conditions. The EPC-AWG computes indicators known as S_1 and S_2 to measure the fiscal adjustment that would be needed to restore long-term fiscal sustainability, i.e. to make the projected debt dynamics consistent with the sustainability conditions. The two indicators can be decomposed to identify two sources of risk to the long-term sustainability of public finances: (i) the initial fiscal position, associated with the inherited debt and structural primary balance; and (ii) the cost of ageing, associated with the projected deterioration in primary balances due to rising age-related expenditure.

The S_1 indicator measures the adjustment in all structural primary balance-to-GDP ratios projected over a finite time horizon ending in 2050 that would be needed for the debt-to-GDP ratio to reach a 60% value by 2050. Given projections starting in year t and ending in $t+h$ (i.e. currently 2050), S_1 is computed by:

$$S_1 = \underbrace{\frac{R_{t,t+h} - 1}{\sum_{s=t}^{t+h} R_{s+1,t+h}} d_{t-1} - pb_{t-1} - \frac{\sum_{s=t}^{t+h} R_{s+1,t+h} (pi_s - pi_{t-1})}{\sum_{s=t}^{t+h} R_{s+1,t+h}}}_A + \underbrace{\frac{d_{t-1} - 60}{\sum_{s=t}^{t+h} R_{s+1,t+h}}}_B + \underbrace{\frac{\sum_{s=t}^{t+h} R_{s+1,t+h} (are_s - are_{t-1})}{\sum_{s=t}^{t+h} R_{s+1,t+h}}}_C \quad (4)$$

In (4), S_1 is broken down into three parts denoted as A , B , and C . The component A indicates the adjustment in the primary balance-to-GDP ratios projected from t to 2050 that would be needed to have a debt ratio in 2050 equal to the inherited ratio d_{t-1} if no changes in age-related expenditure were expected to occur in the future. Intuitively, the ratios pb_s from t to 2050 should be adjusted so as to counteract fully the interest snow-ball effect, even before taking into account the fiscal effects of ageing. The component B indicates the additional adjustment that would be needed to take the debt ratio in 2050 from the value d_{t-1} to the 60% target, still assuming no future changes in age-related expenditure. Components A and B refer

to the initial fiscal position. Finally, the component C indicates the adjustment in the primary balance-to-GDP ratios projected from t to 2050 that would be needed to offset fully the future budgetary changes resulting from ageing populations, i.e. a rising age-related expenditure that deteriorates future primary balances.⁹

The S_1 indicator is useful when considering a target value for the public debt, as a proportion of GDP, to be reached at a certain future point in time. A debt target entails a strong restriction on the primary budget imbalances a government can run as well as on the borrowing it can incur to finance such imbalances. Thus, the debt target reduces the scope for arguing that large primary surpluses over the very long-term may render current fiscal policies sustainable in a situation where indebtedness has already climbed too fast. On the other hand, however, the debt target does not constraint the public debt dynamics beyond the time horizon chosen. Thus, a debt ratio that meets the target as required might well exhibit an explosive growth thereafter or might keep on growing and eventually stabilise around a value well above the target level.¹⁰ Such considerations are warranted because ageing is expected to have large budgetary effects at the end of the projection period and beyond year 2050. Therefore, it is likely that the fiscal adjustment implied by the S_1 indicator does not ensure that the public finances will meet the government intertemporal budget constraint. The S_2 indicator is introduced to make up for this shortcoming.

The S_2 indicator measures the adjustment in all structural primary balance-to-GDP ratios projected over an infinite time horizon that would be needed for the intertemporal budget constraint to be held as equality. Given projections starting in year t , S_2 is computed by:

$$S_2 = \underbrace{\frac{d_{t-1}}{\sum_{s=t}^{\infty} \frac{1}{R_{t,s}}} - pb_{t-1} - \frac{\sum_{s=t}^{\infty} \frac{1}{R_{t,s}} (pi_s - pi_{t-1})}{\sum_{s=t}^{\infty} \frac{1}{R_{t,s}}}}_D + \underbrace{\frac{\sum_{s=t}^{\infty} \frac{1}{R_{t,s}} (are_s - are_{t-1})}{\sum_{s=t}^{\infty} \frac{1}{R_{t,s}}}}_E \quad (5)$$

In (5), S_2 is broken down into two parts denoted as D and E , which correspond to the initial fiscal position and the cost of ageing, respectively. The component D measures the adjustment in the primary balance-to-GDP ratios projected from t onwards that would be needed to satisfy the intertemporal budget constraint if no changes in age-related expenditure were expected to occur in the future. The component E measures the adjustment that would be needed to offset fully the future budgetary effects of ageing over an infinite time horizon. As the available EPC-AWG projections extend out to 2050, in computing S_2 it is assumed that nominal GDP growth rates, nominal interest rates, property income-to-GDP ratios, and age-related expenditure-to-GDP ratios corresponding to years outside the projection horizon are equal to the projected values for 2050.

Furthermore, the magnitude of the S_2 components quantifies the two sources of risk to long-

⁹ This adjustment equals the weighted average of projected changes in age-related expenditure, as proportions of GDP, from t to 2050, with weights determined by the discount factors. When primary balance ratios are adjusted by that figure, the effects of ageing are implicitly absorbed by other fiscal items (e.g. higher taxes or lower non-age-related expenditure) and therefore ageing does not affect the debt ratio dynamics over the projection horizon.

¹⁰ Hauner et al. (2007).

term fiscal sustainability. For instance, a positive and large value for S_2 could stem from a weak fiscal position at present, together with a negligible increase in age-related expenditure expected for the future. But it could also stem from a balanced initial fiscal position coupled with large projected effects of ageing on fiscal budgets. On the other hand, a negative value for S_2 typically results from a very strong initial fiscal position (a negative D) that offsets the budgetary impact of a projected increase in age-related expenditure (a positive E).

The S_2 indicator gives an order of magnitude of the permanent fiscal adjustment needed for the intertemporal budget constraint to be fulfilled. Another indicator, known as the required primary balance (RPB, hereinafter), indicates the level of structural primary balance, as proportion of GDP, that should be reached in the medium-term according to the adjustment implied by S_2 . Operationally, the RPB is computed as the average primary balance ratio over the first five years of the projection horizon plus the value of S_2 . Given projections starting in year t , RPB is computed by:

$$RPB = \sum_{s=t}^{t+4} \frac{pb_s}{5} + S_2 \quad (6)$$

Therefore, by comparing the RPB with the current primary balance-to-GDP ratio, or with the planned ratio over the medium-term, it is possible to gauge whether there is consistency between a sustainable fiscal policy and the prevailing fiscal conditions.

The intertemporal budget constraint from which the S_2 indicator is derived is subject to various criticisms. It is worth mentioning that this constraint implies mild restriction on public finances because a fiscal policy that meets the constraint is allowed to fuel a too-fast indebtedness process, provided that large primary surpluses are expected to come in a distant future. It could also be the case that the intertemporal budget constraint is being satisfied and the debt ratio is growing at an acceptable pace, but the level of the debt ratio is so high that the debt burden is already wielding negative effects on the economy. For instance, debt that grows slowly but whose stock is high might well lead to a large flow of government borrowing that could crowd out private investment. Besides, a hefty debt implies a large interest bill and then, for a government engaging in new borrowing, fewer resources available to finance an increase in primary spending or a tax cut. It is the need to take the debt ratio level into account that makes it convenient to analyze the S_1 indicator along with the S_2 indicator, as suggested by the EPC-AWG methodology.

2.3 Critical aspects in the EPC-AWG methodology for assessing sustainability

It is widely acknowledged that the EPC-AWG methodology for assessing long-term fiscal sustainability has limitations and drawbacks that have prompted further development and refinement of the methodology itself. There are two kinds of shortcomings. The first is related to the sources of data and the use of projections, while the second results from adopting a partial equilibrium approach in analysing debt dynamics. Regarding the first issue, there are data availability problems in several EU countries and the EPC-AWG projection methodologies leave room for some idiosyncrasy since national models are used to estimate spending in public

pensions, the single most important age-related expenditure item. Furthermore, since there is no econometric model underpinning many EPC-AWG projections, it is not possible to characterise the error margins of the projections as if they were forecast errors. For the same reason, attaching probabilities of occurrence to the alternative scenarios proposed for the sensitivity analysis is equally unfeasible. Finally, projections over several decades are very sensitive to the estimation of potential GDP at the beginning of the projection period. In turn, that estimation is subject to a high degree of uncertainty.

Other limitations of the EPC-AWG methodology flow from modelling the dynamics of public debt using a partial equilibrium framework in which only a limited number of the relationships between demographic, macroeconomic, and fiscal variables are taken into account.¹¹ Four important relationships not considered in the European approach are discussed below.

First, the impact of demographic trends on primary spending items is fairly well addressed by the EPC-AWG methodology. But since the impact on tax revenues is not yet considered, the projections offer only a partial picture of the fiscal effects of ageing.

Second, as far as economic growth is concerned, ageing affects the evolution of long-run potential real GDP solely through changes in the employment level, e.g. a declining working-age population and a rising employment rate jointly determine changes in the number of employees, which in turn affect the growth rate of potential real GDP. But the effect of ageing on productivity growth has not been explored yet.¹²

Third, despite the fact that interactions between macroeconomic and fiscal variables heavily influence the dynamics of public debt, an important feedback is neglected within the EPC-AWG framework: the impact of public education expenditure on growth. In the European methodology public education expenditure has no influence on labour productivity, while such a link has been stressed by the literature on human capital and growth. This has implications on fiscal sustainability: education financed by government borrowing raises the public debt stock, but since it contributes to human capital accumulation and potential GDP growth, long-term sustainability would be improved.

Fourth, other feedback is still missing: the effect of debt and budgetary imbalances on interest rates and growth. Interest rates are assumed to be independent of fiscal developments in the EPC-AWG methodology. If persistent budget deficits feed an increasing debt-to-GDP ratio, investors may require higher interest rates to compensate for additional risks, e.g. default risk, and then the public debt dynamics would accelerate because of a stronger snow-ball effect. In addition, if higher interest rates crowd out private investment and thus reduce potential GDP growth, the debt-to-GDP ratio dynamics accelerates further. Therefore, a long-term fiscal sustainability assessment that relies on a partial equilibrium analysis is likely to underestimate the explosive effects of persistent budget deficits. By the same token, such an assessment also underestimates the positive effects of a fiscal consolidation that improves budgetary positions, reduces interest rates, and decelerates the dynamics of public debt.

In the EPC-AWG sustainability assessment, the limited number of relationships considered and the exogenous nature of many relevant variables often give rise to projections indicating a strong accentuation of the debt profile. It is important to keep in mind that such dynamics are

¹¹ Balassone and Franco (2000) emphasise the limitations of the debt dynamics analysis that result from using a partial equilibrium approach.

¹² Carone et al. (2005).

also due to the 'no policy change' assumption. In practice, however, it is likely that a government will react to either an explosive accumulation of public debt or an implosion of debt leading to an explosive accumulation of assets.

Taking these limitations into account, the EPC-AWG sustainability assessments always emphasise that the purpose of analysing debt dynamics is to signal possible budgetary imbalances on the basis of current policies and projected changes in age-related expenditure. Consequently, the EPC-AWG uses the sustainability indicators as a tool to facilitate policy debate and to identify the timing and magnitude of budgetary pressures that could arise in the future in light of ageing and the 'no policy change' assumption. Moreover, the EPC-AWG does not take the S_1 and S_2 indicators at face value, nor does the EPC-AWG recommend undertaking a fiscal adjustment of the size implied by the indicators. Instead, the indicators' values are used to classify the EU countries by their levels of risk to public finance sustainability in quite broad categories: low-, medium-, or high-level risk. In this regard, the quantitative indicators are complemented with qualitative information about factors that have a bearing on long-term public finances sustainability, such as the level of debt ratio and budget position at the beginning of the projection period, the current level of tax-to-GDP ratio, the effects of structural reforms on public pension and healthcare systems, and the reliability of projections on age-related expenditure. These factors facilitate interpretation of the quantitative results and discussion of the budgetary risks facing EU countries.

3 SUSTAINABILITY ASSESSMENT FOR ITALY

This section discusses the results of a long-term fiscal sustainability analysis for Italy following the EPC-AWG methodology described in section 2. The sustainability assessment consists of projecting the debt-to-GDP ratio for the 2012-2050 period and computing the sustainability indicators S_1 , S_2 , and RPB. The scenario discussed in this section, which is referred to as the 'programme scenario', assumes Italy accomplishes the objectives of structural primary balance and public debt set out in the December 2007 update of the Stability Programme, which covers the 2008-2011 period. Hence, the initial conditions are given by the Programme's 2011 figures: a structural primary surplus of 4.9% of GDP and a public debt amounting to 95.1% of GDP. It should be stressed that the Programme already incorporates some fiscal consolidation over the medium-term since the 2007 figures for structural primary balance and public debt are 2.6% and 105%, respectively. As for the 2012-2050 period, the scenario relies on the demographic, macroeconomic, and fiscal projections developed by the EPC-AWG for Italy. These projections are made on the basis of 'no policy change', thus reflecting the prevailing legislation and assuming economic policy will remain unchanged in the future.

3.1 EPC-AWG projections for Italy

Demographic projections are consistent with the 2004 population scenario prepared by Eurostat, often referred to as the 'ad hoc AWG scenario'. As for Italy, the 'ad hoc AWG scenario' for the 2005-2050 period reported in Table 1 envisages: (i) a fairly stable fertility rate

at around 1.4 for most of the period; (ii) an increase in life expectancy at birth of 5.3 years for males and 4.4 years for females; and (iii) an annual net inflow of 150,000 immigrants. As a consequence of expected changes in the age structure of population, the demographic old-age dependency ratio (i.e. the population aged 65 and over as a percentage of the working-age population aged 15-64) would double over the projection horizon, starting from 29.5% in 2005 and reaching 62.1% in 2050.

Table 1 Demographic projections.

		2005	2010	2020	2030	2040	2050
Fertility rate		1.32	1.40	1.40	1.40	1.40	1.40
Life expectancy at birth	male	77.5	78.3	79.9	81.1	82.1	82.8
	female	83.3	84.0	85.3	86.4	87.2	87.8
Net immigration ⁽¹⁾		150	150	150	150	150	150
Population ⁽²⁾		58.0	58.5	58.4	57.5	56.1	53.8
Population by age group ⁽³⁾	0-14	14.2	13.9	13.0	11.8	11.6	11.5
	15-64	66.3	65.5	63.8	61.1	56.1	54.6
	65-79	14.5	14.8	15.9	18.5	22.2	20.6
	80+	5.0	5.8	7.3	8.6	10.1	13.3
Dependency ratio ⁽³⁾	(Pop<15, Pop>64) / (Pop 15-64)	50.8	52.7	56.7	63.7	78.3	83.2
	(Pop>64) / (Pop 15-64)	29.5	31.5	36.4	44.4	57.6	62.1

(1) Thousands (2) Millions (3) Percentage

Source: EUROSTAT 'ad hoc AWG scenario'.

Table 2 reports macroeconomic projections for Italy that are consistent with the EPC-AWG methodology. The main hypotheses are the following: (i) the growth rate of labour productivity rises in the medium-term and stabilises around 1.7% in 2020-2050; (ii) the labour market participation rate for the working-age population aged 15 to 64 increases over time, from 62.9% in 2005 to 70.2% in 2050; (iii) the employment rate rises 8 percentage points in 2005-2050, reaching 65.7% at the end of the projection period; (iv) structural unemployment rate, estimated on the basis of NAIRU, remains stable at 6%. Considering the expected evolution of labour productivity and employment, the growth rate of potential real GDP rises to 1.8% in 2010 and then starts decreasing until it stabilises around 1% in 2030-2050. Since the EPC-AWG assumes a constant real interest rate of 3% and an inflation rate of 2% for the GDP deflator, the nominal interest rate is assumed to be 5% and the projected growth rate of nominal GDP averages 3.3% in the 2005-2050 period.

Table 2 Macroeconomic projections.

	2005	2010	2020	2030	2040	2050
Labour productivity ⁽¹⁾	0.4	1.1	1.7	1.7	1.7	1.7
Participation rate (15-64) ⁽²⁾	62.9	65.8	68.1	68.6	69.7	70.2
Employment rate (15-64) ⁽²⁾	57.7	61.0	63.7	64.2	65.2	65.7
Unemployment rate (15-64) ⁽²⁾	7.7	6.0	6.0	6.0	6.0	6.0
Real GDP ⁽¹⁾	0.0	1.8	1.5	0.9	0.9	1.1
Real interest rate ⁽²⁾		3.0	3.0	3.0	3.0	3.0
GDP deflator ⁽¹⁾		2.0	2.0	2.0	2.0	2.0

(1) Growth rate (2) Percentage

Source: Economic Policy Committee and European Commission.

Fiscal projections refer to the five age-related expenditure items already mentioned: pensions, health care, long-term care, education, and unemployment benefits. Table 3 and Figure 1 show the expected evolution of these items taking into account the legislation enacted up to the 2008 Finance Law (Legge Finanziaria 2008). As a result of the reforms implemented since the 1990s, and contrary to other EU countries, Italy's projected age-related expenditure does not increase significantly over time: the aggregate of the five age-related spending items is expected to increase only by 2.5 percentage points of GDP over the 2005-2050 period, starting from 26.2% of GDP in 2005 and reaching 28.7% in 2050.

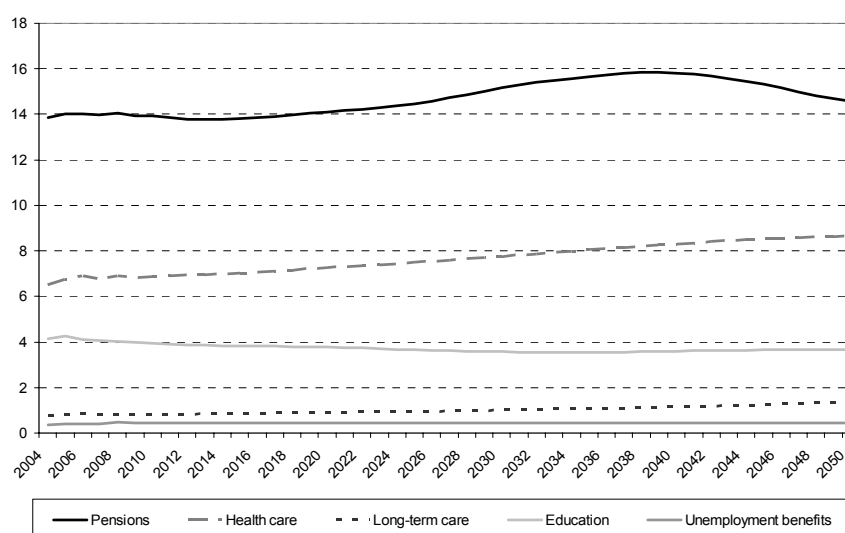
Table 3 Fiscal projections.

	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Age-related spending ⁽¹⁾	26,2	26,0	25,9	26,4	27,0	27,9	28,7	29,3	29,2	28,7
Pensions ⁽¹⁾	14,0	14,0	13,8	14,1	14,5	15,2	15,6	15,8	15,3	14,6
Health care ^{(1) (2)}	6,7	6,8	7,0	7,2	7,5	7,7	8,0	8,3	8,5	8,6
Long-term care ⁽²⁾	0,8	0,8	0,8	0,9	0,9	1,0	1,1	1,1	1,2	1,3
Education ^{(1) (3)}	4,3	3,9	3,8	3,8	3,7	3,6	3,5	3,6	3,7	3,7
Unemployment benefits ⁽¹⁾	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4

(1) Percentage of GDP. (2) Includes public health spending for the elderly. (3) Excludes spending in adult and pre-primary education.

Source: Economic Policy Committee and European Commission.

Fig. 1 Age-related spending projections (% of GDP).



Source: Economic Policy Committee and European Commission.

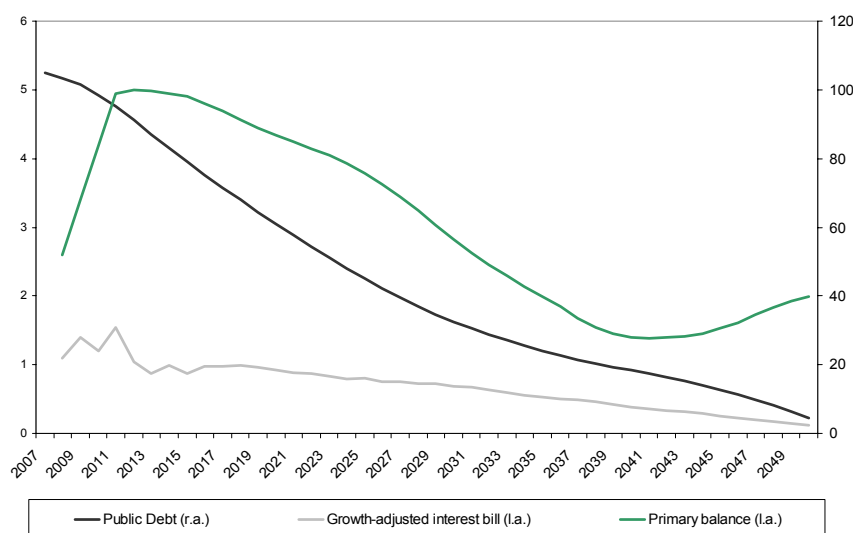
A closer look at the individual items shows that public pensions represent the single most important item. For Italy, projected pensions increase from 14% of GDP in 2005 to 15.9% in

2039 and decrease thereafter reaching 14.6% in 2050.¹³ The second important item is health care expenditure, which rises from 6.7% of GDP to 8.6% in the 2005-2050 period. Public education is the only spending item that is expected to decrease over time, falling from 4.3% of GDP in 2005 to 3.7% in 2050. Finally, expenditure in long-term care is projected to increase up to 1.3% of GDP in 2050 while unemployment benefits remain stable around 0.4% of GDP.

3.2 Projecting public debt

The first step in assessing long-term fiscal sustainability consists of projecting the debt-to-GDP ratio on the basis of the expected evolution of demographic and macroeconomic variables along with projections on age-related expenditure. Figure 2 shows the dynamics of public debt stock, as a percentage of GDP.

Fig. 2 Evolution of public debt in 'programme scenario' (% of GDP).



Source: Authors' calculations.

In the 'programme scenario', Italy accomplishes the Stability Programme's medium-term objectives and then the debt-to-GDP ratio monotonically decreases over the projection period 2012-2050. The debt ratio falls below the 60% Maastricht requirement by 2021 and approaches 4% by 2050. Therefore, the public debt projection is consistent with long-term fiscal sustainability. On the basis of this result, a case can be made for undertaking efforts in order to achieve a fiscal consolidation in the medium-term as that proposed in the December 2007 update of the Stability Programme: a strong initial fiscal position, characterised by a large primary surplus and a lower debt, would be desirable as to provide future governments with

¹³ Under the current legislation for public pensions, the projected increase in pensions spending, as proportion of GDP, is fairly limited. However, as suggested by the rise in the old-age dependency ratio, a large increase in the number of elderly people is also expected. Therefore, the decline in *per capita* pension spending is significant and so may raise doubts regarding the *social* sustainability of the Italian public finances.

enough budgetary resources to pay the interest bill and the expected increases in age-related expenditure items in the years to come.

Figure 2 also decomposes the changes in debt-to-GDP ratio into the primary balance-to-GDP ratio and the growth-adjusted interest bill.¹⁴ It can be seen that projected primary balances deteriorate over time due to ageing. However, the ‘programme scenario’ exhibits a primary surplus level consistently above the growth-adjusted interest bill because of the large initial primary surplus; hence, the debt-to-GDP ratio always decreases.

3.3 Sustainability indicators

The second step in assessing sustainability is the computation of synthetic indicators which measure the fiscal adjustments that would be needed for certain sustainability conditions to be fulfilled. Table 4 reports values of S_1 , S_2 , and RPB.

Table 4 Sustainability indicators.

Scenarios / Indicators	S1				S2			RPB
	S1	S1_A	S1_B	S1_C	S2	S2_D	S2_E	
Programme Scenario - Baseline	-1,0	-3,3	0,6	1,7	-1,0	-3,2	2,2	4,0

Source: Authors' calculations.

In the ‘programme scenario’, both S_1 and S_2 exhibit a value of -1. Technically, this value indicates that, given the initial conditions and expected changes in age-related spending, it is possible to reduce the projected primary balance-to-GDP ratios by 1 percentage point and still obtain a public debt dynamics that fulfils the two sustainability conditions used in the EPC-AWG methodology. Accordingly, two implications can be drawn from the value of S_1 and S_2 . First, the medium-term fiscal consolidation that is *strictly* necessary to achieve long-term sustainability is slightly smaller than that incorporated into the 2007 Stability Programme; specifically, given the 2011 debt-to-GDP ratio of 95.1% and the expected changes in age-related spending, the 2011 structural primary surplus must be at least 3.9% of GDP, a figure smaller than 4.9% as in the Programme.

Second, the fiscal consolidation incorporated into the Programme can be seen as buying insurance as it provides a safety margin to absorb unexpected negative shocks to public finances (which could deliver *ex post* values worst than *ex ante* expected ones); specifically, given the Programme’s 2011 figures and the expected changes in age-related spending, Italy’s public finances are not only sustainable under the expected trends underlying the reported projections but also under unexpected unfavourable circumstances whose fiscal effects are equivalent (at most) to a permanent reduction of future primary surpluses by 1 percentage point of GDP. In this regard, considering the uncertainty surrounding all projection exercises, a case can be made for undertaking fiscal consolidation that is slightly more rigorous than that *strictly* necessary for the sustainability conditions to hold under the benchmark scenario. As the

¹⁴ The growth-adjusted interest bill is the interest expenditure computed using the interest rate-growth differential and measured as a proportion of GDP, i.e. $r_t d_{t-1} = (i_t - y_t) D_{t-1} / Y_t$.

sensitivity analysis of section 4 points out, it is the strong initial fiscal conditions resulting from the Programme's objectives that would allow absorbing the fiscal impact of unfavourable trends (i.e. unfavourable compared with those underlying the 'programme scenario') while maintaining long-term sustainability of public finances.

The case for fiscal consolidation is reinforced by analysing the decomposition of S_1 and S_2 . In absence of fiscal effects associated with an ageing population, the initial budgetary position in 2011 alone would ensure public finances fulfil the two sustainability conditions. Introducing the expected fiscal effects of ageing does not change the picture: the 2011 budgetary position is strong enough to counteract fully the pressure on future primary balances exerted by a raising age-related expenditure.¹⁵

4 SENSITIVITY ANALYSIS

Projecting over several decades is an exercise involving a high degree of uncertainty. Therefore, this section assesses the robustness of the sustainability results obtained in the previous section by looking at the variables whose future trend is subject to the highest degree of uncertainty in the case of Italy. For this purpose, the 'programme scenario' is now taken as the benchmark for comparisons. By considering a set of different demographic and macroeconomic projections constructed for the purpose of this paper, the sensitivity analysis aims at addressing the uncertainty surrounding the EPC-AWG projections used in section 3.

Two groups of scenarios are considered in this section. The first group focuses on alternative projections for immigration flows, life expectancy at birth, the female labour participation rate, labour productivity growth, and real interest rates. In all cases within this group, it is assumed the Stability Programme's objectives for the medium-term (2008-2011) are achieved. Therefore, initial conditions are identical to the benchmark's and any difference among scenarios results exclusively from the projections for 2012-2050. The second group deals with differences in the initial levels of primary balance and public debt, making use of the EPC-AWG projections for 2012-2050.

It should be mentioned in advance that public finances turn out to be sustainable for most of the alternative scenarios. Therefore, the sustainability results obtained in section 3 appear to be quite robust.

4.1 Alternative demographic hypotheses

Demographic developments are expected to have large effects on potential GDP growth and public finance in the next decades, implying new challenges for policymakers in Italy. In looking at the EPC-AWG projections of all EU countries, Italy stands out for the large number of old-age people as a proportion of the active population, and for its very rapid population-ageing process. For instance, the demographic old-age dependency ratio for the EU25 is projected to rise from 24.5% to 51.8% in 2005-2050, while Italy's increase from 29.5% to 62.1%. Besides,

¹⁵ Component C of S_1 implies that the primary balance-to-GDP ratios projected over 2012-2050 have to be increased by 1.7 percentage points in order to counteract the fiscal effects of ageing expected in that period. Component E of S_2 suggests the increase should be of 2.2 percentage points to cope with those effects over an infinite horizon.

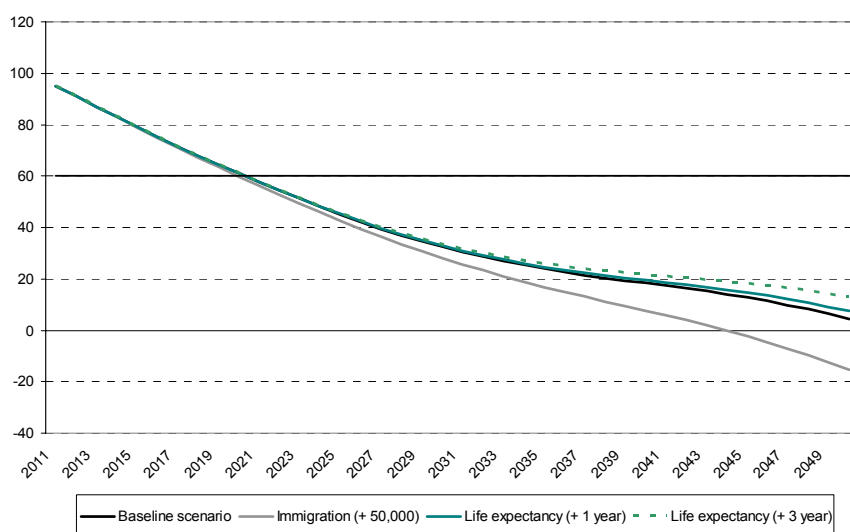
fertility rates in Italy and Spain are the lowest in the EU. Such backdrop makes a case for considering the possible contribution of immigration and life expectancy to the sustainability of Italy's public finances. The case is even stronger when noting the EPC-AWG projections for these two variables exhibit a high degree of uncertainty.

To address the immigration issue, a scenario has been developed on the assumption of an annual net inflow of 200,000 immigrants for the 2012-2050 period, i.e. an increase of 50,000 incoming foreigners with respect to the benchmark 'programme scenario'. The gender- and age-structure of immigrants in this alternative scenario is the same as that incorporated into the Eurostat's 'ad hoc AWG scenario', and hence it is only the magnitude of immigration flows that differs between the corresponding projections. In designing this scenario, the effect of larger immigration flows on employment and productivity growth is taken into account, given the 'production function approach' adopted by the EPC-AWG and the projected evolution of the capital stock.¹⁶ Figure 3 shows the projected evolution of debt-to-GDP ratio under the higher-immigration scenario. It turns out that the debt ratio falls below 60% in 2020 and leads to net assets of 15% of GDP in 2050.

Two other scenarios deal with the effects of life expectancy at birth, assuming that by 2050 the average person is expected to live 86.3 years in one scenario and 88.3 years in the other. The respective gains in life expectancy of 1 and 3 years above the benchmark are obtained by reducing the probability of death from 2012 onwards by an amount proportionally larger than that assumed in the Eurostat's 'ad hoc AWG scenario'. Such a criterion applies to any individual regardless of gender and age, thus implying the alternative paths for probability of death are neutral with respect to the gender- and age-structure of the population. The evolution of public debt, as a percentage of GDP, under the two higher-life expectancy scenarios is presented in Figure 3; in both cases, the debt ratio decreases over time but at a slower pace compared to the benchmark. In the scenario with a 1-year gain in life expectancy, the debt-to-GDP ratio reaches 7% in 2050, while for the scenario with a 3-year gain, the ratio reaches 13%. The public finances are therefore sustainable under alternative demographic developments.

Fig. 3 Evolution of public debt (% of GDP) - Alternative demographic hypotheses.

¹⁶ For a description of the EPC-AWG production function approach, see Denis et al. (2006).



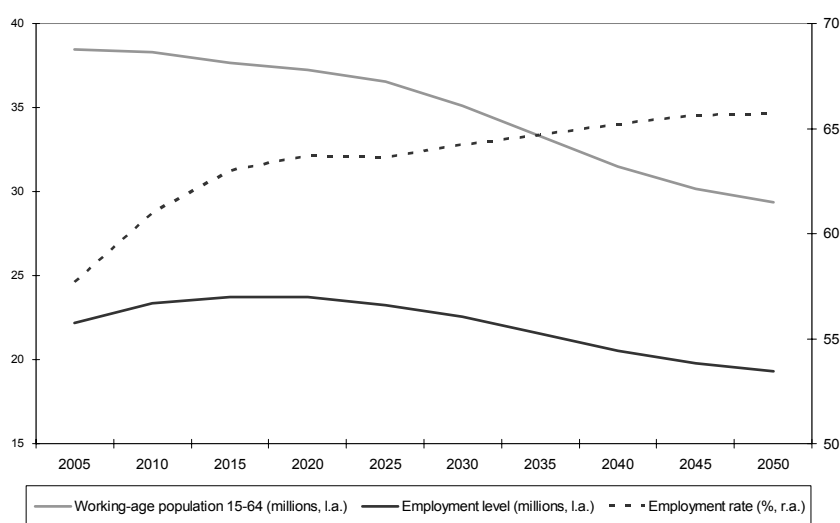
Source: Authors' calculations.

4.2 Alternative macroeconomic hypotheses

A striking aspect of the EPC-AWG projections regards the sources of long-term growth in a context of ageing population: labour as factor of production would make a negative contribution to potential GDP growth since the number of employees is expected to decline over time, and it is therefore only the growth in labour productivity that would support potential GDP growth.

Figure 4 shows the EPC-AWG projections of the working-age population (aged 15 to 64), employment level, and employment rate. Two periods can be easily identified: (i) in the 2005-2020 period, there is an increase in the number of employees because rising employment rates offset the impact of a declining working-age population; and (ii) in 2020-2050, the number of employees eventually falls because the negative effect of the declining working-age population prevails over a employment rate that gradually stabilises. Overall, employment is projected to increase by 1.5 million people in 2005-2020, and to fall by 4.4 million in 2020-2050.

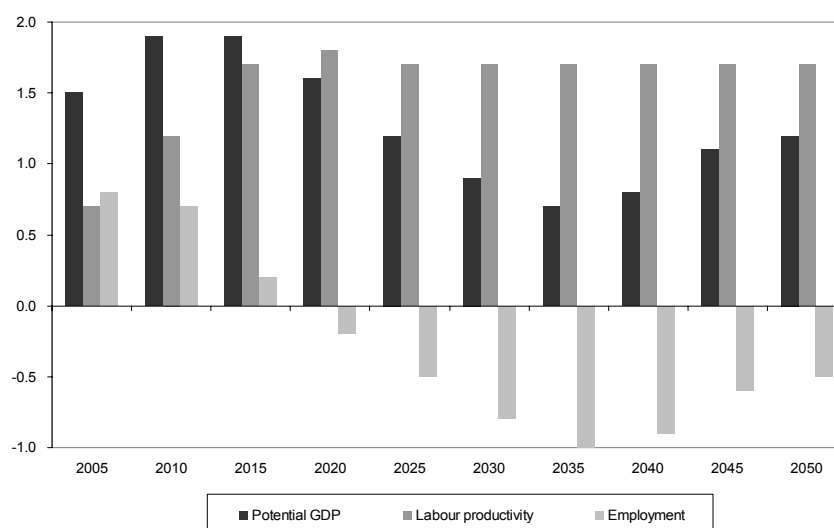
Fig. 4 Working-age population and employment projections.



Source: Economic Policy Committee and European Commission.

With such a negative dynamics for employment, the evolution of labour productivity is critical to sustaining economic growth. In Figure 5, the potential real GDP growth rate is broken down into the growth rates of employment and labour productivity. While both factors are projected to make a positive contribution to potential growth in 2005-2020, it is only labour productivity that is supportive of potential growth from 2020 onwards because of the expected decline in employment. There is a case then for considering the impact on long-term fiscal sustainability of alternative scenarios regarding employment rates and labour productivity growth.

Fig. 5 Decomposition of potential GDP growth rate (%).



Source: Economic Policy Committee and European Commission.

As shown in Figure 4, higher employment rates are expected to offset temporarily the negative effects on employment and potential GDP growth resulting from a declining working-age population. For a given unemployment-rate time path, the evolution of employment rate is entirely determined by the labour participation rate. Regarding the latter variable, demographic and legislative developments are likely to increase the participation of middle-aged women and older workers in labour markets. Women of recent cohorts tend to work more than women of past cohorts because of socio-cultural factors and individual decisions regarding childbearing and education achievement; hence, as new generations of women with a stronger tendency to work replace those with lesser tendency, the overall female labour participation rate mechanically increases (the so-called ‘cohort effect’). Also, a one-off increase in the labour participation of older workers in the job market has been observed as a consequence of enacted pension reforms that increase the statutory retirement age entitling workers to pension benefits, restrict access to early-retirement pensions, and remove financial incentives for people to withdrawn from the labour force.

The increase in Italy’s female participation rate has been substantial in recent years. This is captured in the EPC-AWG projections by the cohort method. With this approach, a lifetime profile of labour participation is estimated for a given cohort of a certain gender on the basis of probabilities of entering and exiting the labour markets. These probabilities are estimated using available information on recent observed patterns, which are kept constant so that the ‘no policy change’ assumption applies. By assigning different lifetime profiles to different cohorts, it is possible to capture changes in labour participation across cohorts for a group of a similar age and gender. Still labour participation of cohorts not yet in the labour market may be higher than the pattern observed in the past, especially as far as women are concerned.

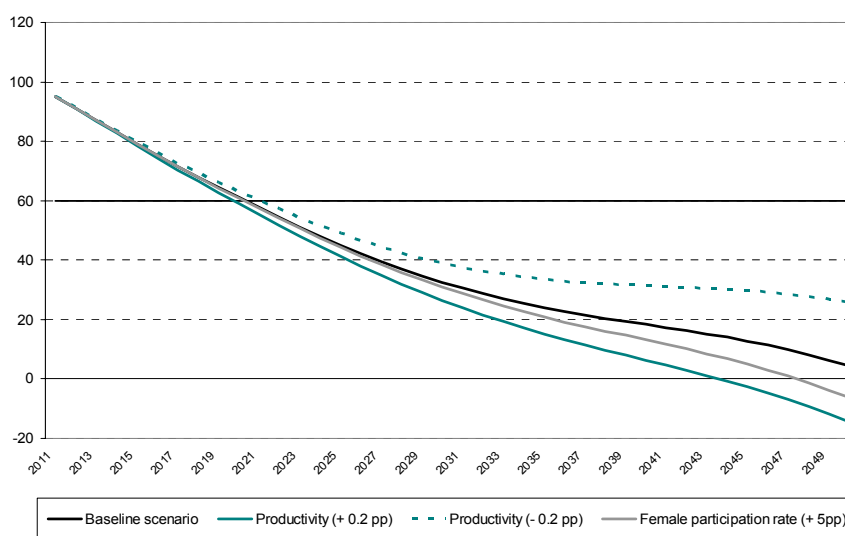
To address this shortcoming, an alternative scenario has been designed assuming the 2050 female participation rate to be 5 percentage points above that assumed in the benchmark ‘programme scenario’. In constructing the alternative scenario, the improvement in women’s participation is obtained by adjusting upwards the probability of entry to labour markets. In addition, the effects of higher female participation on employment and productivity growth are also taken into account, given the ‘production function approach’ adopted by the EPC-AWG and the projected evolution of the capital stock. Figure 6 shows the evolution of debt-to-GDP ratio under this scenario. Since the debt ratio decreases over time faster than in the benchmark, it delivers net assets of 6% of GDP in 2050 and improves long-term fiscal sustainability.

Employment rates are bound to yield temporary benefits by postponing the time at which the number of employees starts to fall. In the long-term, then, potential GDP heavily depends on a continuous rise in productivity. At the same time, the baseline scenario’s hypothesis on total factor productivity (TFP) is dependent on Italy catching up to productivity levels in the US, which is somewhat questionable. To analyse the impact of alternative patterns of productivity, two scenarios have been constructed in which the corresponding TFP growth rate for the 2015-2050 period is 0.2 percentage points above and below the figure assumed in the benchmark, respectively.¹⁷ For 2008-2014, both scenarios consider the growth rate of TFP gradually converging towards the assumed 2015 values. For the alternative scenarios, Figure 6 reports the projected dynamics of debt-to-GDP ratio. As expected, a higher productivity growth rate

¹⁷ The EPC-AWG methodology uses a production function in which labour productivity depends on TFP and capital intensity.

strengthens long-term fiscal sustainability with respect to the benchmark ‘programme scenario’ since the debt ratio falls below the 60% Maastricht requirement by 2020 and delivers net assets of 14% of GDP in 2050. Incidentally, the evolution of public debt in this scenario is similar to that obtained in the higher-immigration scenario. For a lower productivity growth rate, the public debt dynamics is relatively less favourable but the public finances are still sustainable; the debt ratio reaches 26% in 2050.

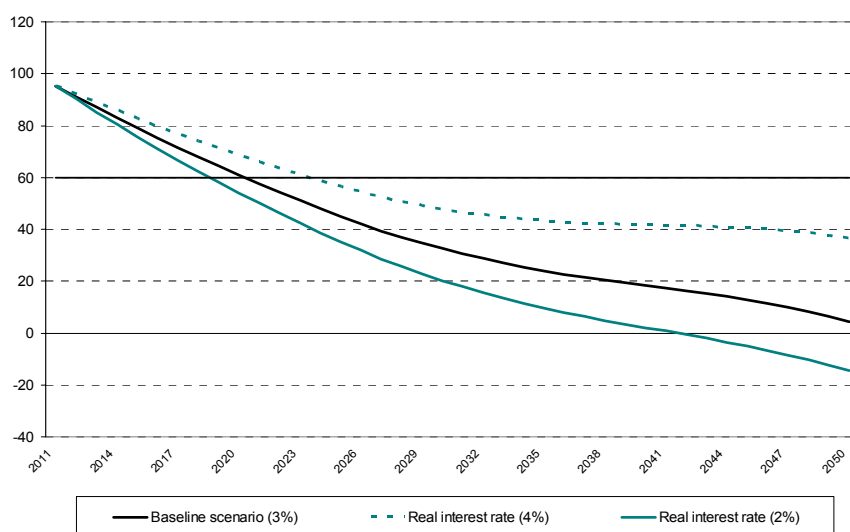
Fig. 6 Evolution of public debt (% of GDP) - Alternative macroeconomic hypotheses.



Source: Authors' calculations.

The real interest rate is another key variable for debt dynamics, especially in Italy's case. The benchmark assumes the real interest rate to be constant at 3%, an *ad hoc* assumption. To assess the role of such assumption on sustainability results, two alternative scenarios have been constructed with values of 2% and 4% for the real interest rate. The evolution of public debt is presented in Figure 7. In the scenario with a 2% real interest rate, the debt ratio performs better than in the benchmark scenario: it crosses the 60% value in 2019 and gives rise to net assets of 15% of GDP in 2050. For a real interest rate of 4%, public debt decreases slowly and reaches 36% of GDP in 2050. In both cases, decreasing debt ratios are consistent with fiscal sustainability.

Fig. 7 Evolution of public debt (% of GDP) - Alternative macroeconomic hypotheses.



Source: Authors' calculations.

Table 5 shows the sustainability indicators corresponding to the alternative scenarios discussed so far.¹⁸

Table 5 Sustainability indicators.

Scenarios / Indicators	S1				S2			RPB
	S1	S1_A	S1_B	S1_C	S2	S2_D	S2_E	
Programme Scenario - Baseline	-1,0	-3,3	0,6	1,7	-1,0	-3,2	2,2	4,0
Immigration (+ 50,000)	-1,4	-3,4	0,6	1,4	-1,6	-3,3	1,8	3,4
Life Expectancy (+ 1 year)	-0,9	-3,3	0,6	1,7	-0,8	-3,2	2,3	4,1
Life Expectancy (+ 3 year)	-0,8	-3,3	0,6	1,8	-0,6	-3,2	2,6	4,3
Female LPR (+ 5 pp)	-1,2	-3,3	0,6	1,5	-1,3	-3,2	2,0	3,6
Productivity (+ 0.2 pp)	-1,4	-3,5	0,6	1,4	-1,4	-3,4	1,9	3,5
Productivity (- 0.2 pp)	-0,6	-3,1	0,6	1,9	-0,5	-3,0	2,5	4,4
Real interest rate (4%)	-0,3	-2,4	0,5	1,6	-0,3	-2,3	2,0	4,6
Real interest rate (2%)	-1,6	-4,2	0,8	1,8	-1,5	-4,1	2,5	3,4

Source: Authors' calculations.

4.3 Alternative initial conditions in 2011

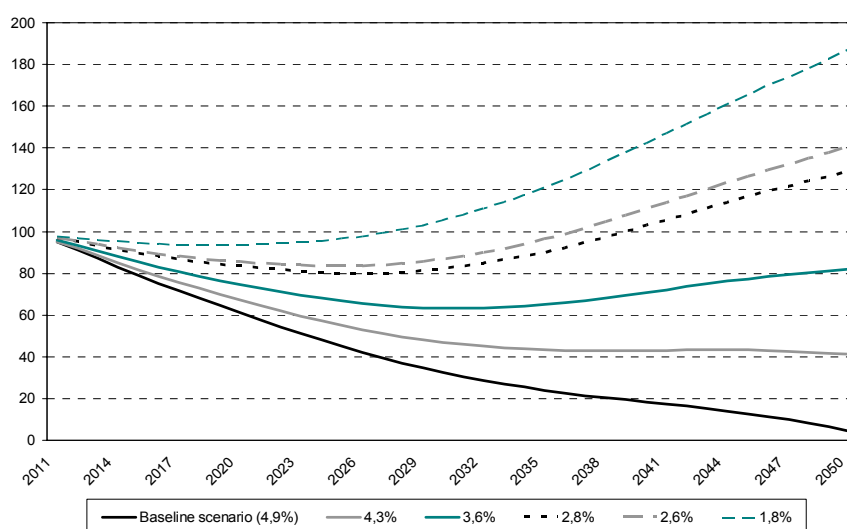
As already mentioned, sustainability results prove to be highly sensitive to the initial primary

¹⁸ It was mentioned in section 3 that, since the S_2 value is -1 in the 'programme scenario', the 2007 Stability Programme's medium-term fiscal consolidation can be seen as providing a safety margin against any unexpected unfavourable shock whose effects are equivalent (at most) to a permanent reduction of future primary surpluses by 1 percentage point of GDP. For the scenarios with lower productivity growth and higher real interest rate, the values of S_2 are -0.6 and -0.3, respectively, and therefore the implicit unfavourable shocks to productivity and real interest rate are of a magnitude equivalent to a permanent reduction in the primary balance-to-GDP ratio by 0.4 and 0.7 percentage points, respectively. Since the magnitude of the shocks is within the safety margin of the Programme, public finances remain sustainable. On the contrary, if the government undertakes the medium-term fiscal consolidation *strictly* necessary to meet the sustainability conditions under the benchmark scenario's projections, those shocks would lead to unsustainable public finances.

balance and public debt stock that are assumed in computing the debt dynamics. To evaluate sensitivity with respect to alternative structural primary balance-to-GDP ratios, a set of scenarios has been constructed using different values for 2011 and maintaining the EPC-AWG projections for the 2012-2050 period.¹⁹

Figure 8 illustrates the debt-to-GDP ratio for scenarios in which the 2011 primary balance ranges from 4.3% to 1.8% of GDP. For initial values 4.9% and 4.3%, public debt is decreasing and at some point falls below the 60% Maastricht requirement. An explosive debt path is seen with all the other scenarios because of the weaker initial fiscal positions. Some of these scenarios can be interpreted as economic-policy decisions. For instance, had the 2008 Finance Law not to be implemented, the projected primary balance for 2011 would have been 2.6% of GDP, thus failing to ensure long-term fiscal sustainability. But even in the case where the budgetary effects of the 2008 Finance Law are taken into account, the expected 2.8% primary balance-to-GDP ratio for 2011 would be insufficient for public finances to be sustainable. These considerations reinforce a point made in section 3: a critical factor for long-term sustainability is the achievement of medium-term fiscal consolidation of the magnitude proposed in the 2007 Stability Programme, taking safety margins into account.

Fig. 8 Evolution of public debt (% of GDP) - Alternative 2011 primary balances.



Source: Authors' calculations.

It has been argued that a one-shot debt reduction without any primary balance adjustment would be an alternative road to sustainability. To explore such a policy strategy, it is possible to design a new scenario which starts in 2009. Assuming Italy achieves the Stability Programme's objectives for 2008 and 2009, the budgetary conditions in 2009 are characterised by a primary balance of 3.4% of GDP and a public debt of around 100% of GDP. In this case, public finances are unsustainable as the debt ratio explodes over time. The one-shot reduction in 2009 debt

¹⁹ It is assumed the 2010 public debt is 98.5% of GDP.

that would restore sustainability is 30 percentage points of GDP (approximately 500 billion euros) if the intertemporal budget constraint is taken as sustainability condition, while meeting the 60% Maastricht criterion requires a one-shot reduction of 15 percentage points of GDP (approximately 250 billions euros).²⁰ Even considering the latter case, it is clear that this option would be too demanding and so there is no real alternative to a primary balance adjustment in order to ensure the long-term sustainability of Italy's public finances.

5 THE IMPACT OF PENSION REFORMS ON FISCAL SUSTAINABILITY

The EPC-AWG framework can also be used to evaluate the impact of past Italian pension reforms on long-term sustainability, an issue particularly relevant given the emphasis the reformed Stability and Growth Pact places on this kind of reforms. This section analyzes the effects on pension expenditure and public debt dynamics of the reforms implemented in the 2004-2007 period that have a financial impact on the Italian pension system.

It should be noticed at the outset that the pension expenditure projection in the 'programme scenario' (see Table 3) assumes full enforcement of existing legislation, especially the pension reforms approved in 2004-2007 and the July 2007 Welfare Protocol signed between the government and labour unions. As for the pension system, the Protocol outlines an increase in small pensions, the requisites for qualifying to early-retirement pensions, the requisites for special pensions in cases of strenuous work, and the criteria for updating and computing the transformation coefficients linking pension benefits to life expectancy.

For the purpose of this section, four alternative scenarios concerning the future evolution of pension expenditure have been constructed by incorporating different assumptions about the legal framework of the pension system. A first scenario takes into account solely the budgetary effects of the Welfare Protocol provisions that refer to small pensions. A second scenario excludes all the budgetary effects of the Welfare Protocol. A third scenario removes fully the impact on pension spending due to the 2004 pension reform, known as the 'Maroni Reform' (Law 243/2004). A fourth scenario assumes the transformation coefficients linking pension benefits to life expectancy (enacted by Law 335/95) are not revised during the projection period 2008-2012.²¹

Figure 9 shows the projections for pension expenditure under the 'programme scenario' and the four alternative scenarios. It can be observed that the effect on pension spending of implementing the Protocol's legal provisions is fairly small; this is apparent when comparing the 'programme scenario' to the first scenario, which involves only the adjustment in small pensions. Such a small impact is due to the fact that, in the medium- and long-term, the effects of the Protocol are offset by the budgetary improvements generated by reducing the interval required for updating the transformation coefficients from 10 to 3 years. In this regard, Figure 9 also shows that, if the transformation coefficient were not revised at all, the overall impact on

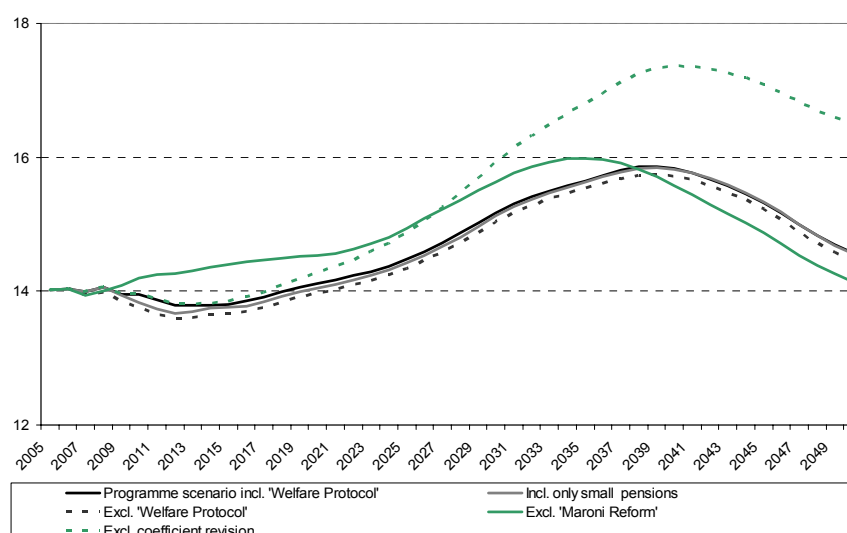
²⁰ Alternatively, sustainability can be achieved by fiscal consolidation that would reduce the primary balance by 0.52 percentage points of GDP from 2010 onwards, if the intertemporal budget constraint is considered, or by 0.49 percentage points, if the 60% Maastricht criterion is used.

²¹ In other words, while the 'programme scenario' is consistent with the revision of transformation coefficients during the projection period, the revision does not occur in the fourth scenario, thus implying a modification of the regulation currently in force.

pension expenditure would be quite significant: pension spending in the fourth scenario is higher than in the 'programme scenario', the difference being nearly 2 percentage points of GDP in 2050.

Figure 9 shows that pensions in the third scenario (i.e. without the 'Maroni Reform') would be above those projected in the 'programme scenario' until 2038, and slightly below thereafter. Hence, the 2004 pension reform entails a positive effect on pension spending up to 2038. In the 'programme scenario', the increase in requisites for qualifying to early-retirement pensions generates financial savings that accumulate up to 2030. These savings subsequently decrease, thus worsening the pension expenditure-to-GDP ratio, which is also affected by the incentives offered to postponing retirement from the labour market. In 2050, the 'programme scenario' exhibits pension expenditure that is 0.4 percentage points of GDP higher than in the pre-2004 reform scenario.

Fig. 9 Pension spending projections (% of GDP) - Alternative legislation scenarios.

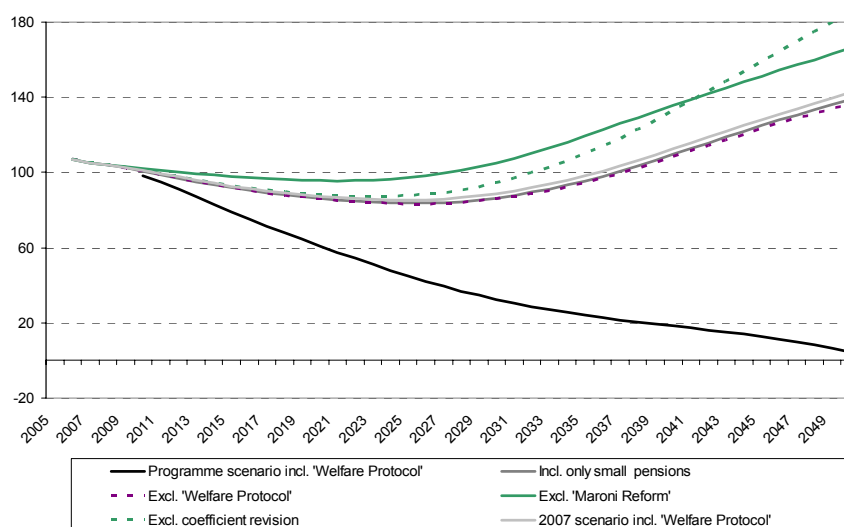


Source: Authors' calculations.

The implications of these alternative scenarios on the debt-to-GDP ratio are illustrated in Figure 10. To facilitate comparability of debt projections, Figure 10 considers the '2007 scenario' in which pension spending is projected taking into account all the reforms mentioned, so expected pension expenditures are identical to those used in the 'programme scenario'. However, the '2007 scenario' assumes Italy maintains a constant structural primary balance in 2008-2011 at the level observed in 2007 and the medium-term evolution of public debt is adjusted accordingly. Then, the '2007 scenario' delivers a primary surplus of 2.6% of GDP and a public debt around 100.2% of GDP in 2011, and leads to an unsustainable path for public finances. Assuming no revision of transformation coefficients occurs, in 2050 the projected debt-to-GDP ratio exceeds the figure corresponding to the '2007 scenario' by 43 percentage points of GDP, and exceeds the figure of the 'programme scenario' by 180 percentage points. Assuming, instead, the 2004 pension reform did not take place, in 2050, the projected debt-to-

GDP ratio exceeds the figures corresponding to the '2007 scenario' and 'programme scenario' by 23 and 160 percentage points of GDP, respectively.

Fig. 10 Evolution of public debt (% of GDP) - Alternative legislation scenarios.



Source: Authors' calculations.

6 CONCLUSIONS

When taking into due account uncertainties surrounding long-term projections and the connected reliability of demographic and macroeconomic assumptions, limitations linked to data availability and comparability and the lack of a fully comprehensive methodology, which would be able to exploit all possible relationships among relevant variables, the definition and, notably, the assessment of long term sustainability of public finances becomes a difficult task over all. The use of a commonly-agreed platform through which EU member states can evaluate the soundness of their fiscal policy undoubtedly provides a very constructive starting point.

This paper suggests some extensions to the standard assessment of public finance sustainability as routinely performed for the purpose of EU multilateral surveillance and with specific regard to Italy's case. In this respect, the results of sensitivity analyses on demographic, macroeconomic, and fiscal variables which are deemed to play a prominent role in the future have been reviewed and discussed. Despite of the shortcomings and weaknesses of the European methodology, sensitivity analysis appears warranted as it provides insight for evaluating whether sustainability conditions will be satisfied and, if not, which policy strategies should be adopted in the future to get back on a sustainable path.

Within the EMU, Italy serves as a proper example for analysis of the effects of population ageing and low economic growth (mostly due to reduction or stagnation in productivity growth) on public budget items. The results of the sensitivity analysis are encouraging in Italy's case

since sustainability appears to be robust under different hypothetical demographic and macroeconomic scenarios.

Furthermore, according to our findings, migration flows and labour productivity dynamics are the demographic and macroeconomic variables contributing the most to fiscal sustainability in Italy. However, the results produced by changes in migration flow assumptions are not clear-cut, and depend on the structure by age and gender of immigrants. For instance, by assuming an unchanged age- and gender-structure of migration flows, projections might miss the potentially-negative impact on relevant components of public expenditure, such as health care, education, and social transfers.

Similar reasoning applies in case of an increase in the labour participation rate because the higher public revenues resulting from a rise in social contributions (associated with a more favourable employment dynamics in the medium-term), could be offset by a higher pension expenditure at the end of the projection period.

Nevertheless, labour productivity gains should be considered as the most important factor in ensuring long-term fiscal sustainability, and in this respect, the implementation of public policies such as those included in the Lisbon Strategy package is an essential condition to boosting labour productivity and fostering potential growth.

As far as fiscal variables are concerned, our results show that adjusting the primary balance in the near term is crucial to achieving fiscal sustainability in the long-term. At the same time, the results indicate that implementing a one-shot debt reduction strategy in an attempt to avoid such a budgetary adjustment would imply an unrealistic debt cutback.

Finally, as detailed in the paper and in line with the economic rationale of the reformed Stability and Growth Pact, other policies are deemed to be sustainability-improving in a permanent manner, notably pension reforms. More specifically, the cost of ageing in Italy is relatively moderate if compared to the European average thanks to the changes in Italy's pension system in the past 15 years. However, an important drawback of the sustainability of Italy's public finances is represented by the declining replacement rate, i.e. the average pension over the average wage. This raises the issue of social sustainability, which thus far has not been properly addressed.

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